

Solid State Technology

1989
CUMULATIVE INDEX

ARTICLES AND AUTHORS

ARTICLES AND AUTHORS	ISSUE	PAGE
A Practical Approach to Particulate Control within an ASIC Production Facility Randy S. Weiss	Oct	S14
Advanced Techniques for Making 1X Reticles J.A. Reynolds, B. Olander, J. Stewart	May	117
Advancements in Complex Microcircuit Qualification—QML E.B. Hakim	May	98
Advances in E-Beam Metrology Karl Harris	Jan	100
Advances in Instrumentation for CV Measurement Edward H. Nicollian	Aug	107
Air Conditioning and Particle Filtration Systems for Energy Saving T. Takenami, T. Ohmi, S. Fukuda	Apr	161
An Overview of Health Hazards in Semiconductor Manufacturing David G. Baldwin, James H. Stewart	Jul	73
Characterizing the Surface Chemistry of Magnetic Disk Media through Surface Derivatization Gunther Barth, Robert D. Cormia, Laura Teasley	Jan	119
Chemical and Radiation Hazards in Semiconductor Manufacturing David G. Baldwin, James H. Stewart	Aug	131
Chemical Vapor Deposition of Refractory Metal Silicides for VLSI Metallization C. Bernard, R. Madar, Y. Pauleau	Feb	79
Chemical Vapor Deposition Trends: A Marketing Perspective for the 1990s B.C. Rhine	May	129
Codes and IC Fire Hazards Robert J. Campbell	Jul	93
Comparison of Hot and Cold Cathode Ionization Gauges R.N. Peacock, N.T. Peacock	Oct	99
Control of Liquid-Based Particle Deposition on Oxide-Etched Silicon Wafers Venu B. Menon, Linda D. Michaels, Anthony C. Clayton, Robert P. Donovan	Oct	S9
Defect Learning Requirements F. Ramakrishna, Jeanne Harrigan	Jan	103
Developments of Organic Recording Materials for Optical Disks Joseph J. Wrobel	Jun	103
Dry Etching for the Fabrication of Integrated Circuits in III-V Compound Semiconductors C.B. Cooper III, S. Salimian, M.E. Day	Jan	109
Effects of Particulate Size, Composition and Medium on Silicon Wafer Cleaning V.B. Menon, L.D. Michaels, R.P. Donovan, D.S. Ensor	Mar	S7
Electron Beam Lithography: A "Gating" Item James T. Clemens	Mar	69
Emergency Response Teams Richard A. Bolmen, Jr.	Jul	85
Engineered Reliability Underpins BiCMOS Process R. Lahri, S.P. Joshi	Apr	175
Factors Affecting Particle Content in High Pressure Cylinder Gases H-C Wang, H-Y Wen, G. Kasper	May	155
Gallium Arsenide Hazards, Assessment, and Control Andrew J. McIntyre, Brian J. Sherin	Sep	119
Gallium Arsenide Processing and Hazard Control Andrew J. McIntyre, Brian J. Sherin	Jul	101

ARTICLES AND AUTHORS

ARTICLES AND AUTHORS	ISSUE	PAGE
Gas Cabinet Technology: A Status Review Nicholas O. Korolkoff	Mar	97
Hazardous Materials Management in the Semiconductor Industry Neal Langerman	Jul	87
Health Issues in the Microelectronics Industry Dr. Joseph LaDou	Jul	79
High Purity Gas Filtration Barry Gottinsky, Saied Tousei	Mar	S1
High Quality Trench Etches in Silicon R.N. Carlile, V.C. Liang, M.M. Smadi	Apr	119
High Tc Thin Films: A Forerunner to the Metal Oxide Revolution T. Venkatesan, L. Nazar, X.D. Wu, A. Inam	Aug	143
High Temperature Superconductors for Microelectronics Randy Simon	Sep	141
High-Tc Superconductivity in Digital Electronics William J. Gallagher	Nov	151
Implantation in InP Technology B.L. Sharma	Nov	113
Inline Wafer Level Reliability Monitors M. Davis, F. Haas	May	107
Linewidth Metrology Requirements for Submicron Lithography W.H. Arnold, B. Singh, K. Phan	Apr	139
Managing Lithography Errors M.L. Rieger, J.A. Schoeffel	Apr	151
Managing the Integration of Safety in Semiconductor Manufacturing Richard A. Bolmen, Jr.	Jul	63
Materials Evaluation of Disk Drive Components by Thermal Analysis P.B. Narayan, A.S. Brar, Y.M. Chow	May	250
Metrology Applied to X-Ray Lithography Irving Plotnick	Jan	102
Metrology for Steppers Roy Wetzel	Jan	106
Nanoelectronics Robert T. Bate	Nov	101
New Pumping Technologies for the Creation of a Clean Vacuum Environment Marsbed Hablanian	Oct	83
Optical Lithography Requirements in the Early 1990s John H. McCoy, Wei Lee, Gil L. Varnell	Mar	87
OSEE Determination of Fluorocarbon Lubricant Film Thickness on Magnetic Disk Media Khalid T. Mahmud, Mantosh K. Chawla	Sep	135
Particle Control in the Construction of a 1 Mbit DRAM Gas Distribution System David S. Zuck	Nov	131
Photoresists for Deep UV Lithography James R. Sheats	Jun	79
Plasma Etching Using NF3: A Review J.A. Barkanic, D.M. Reynolds, R.J. Jaccodine, H.J. Stenger, J. Parks, H. Vedage	Apr	109
Profiling of Silicon and III-V Compounds by Point Contact Techniques Robert J. Hillard, Robert G. Mazur, Harry L. Berkowitz, Prosenjit Rai-Choudhury	Aug	119
Pulsed Laser Deposition: A Viable Process for Superconducting Thin Films? B. Dutta, X.D. Wu, A. Inam, T. Venkatesan	Feb	106
Purification of Reactive Process Gas Streams Terrell D. Cambria, Glenn M. Tom	Jul	S1
Recent Trends in X-Ray Resists: Part I J. Lingnau, R. Dammel, J. Theis	Sep	105

Recent Trends in X-Ray Resists: Part II J. Lingnau, R. Dammal, J. Theis	Oct	107	The Effect of Elevated Softbake Temperature on High Resolution Positive Photoresist S.F. Yoon, P.L. Villa, M. Calzavara, G. Degiorgis	Feb	89
Risk Management in Semiconductor Manufacturing John W. Schaefer	Nov	139	Toxic Gas Monitoring System Paul C. Manz, Matthew Leahey, Nicholas O. Korolkoff	Oct	115
Selection Criteria for Hazardous Waste Gas Disposal Richard E. Hamilton	Jul	95	U.S. Hybrid Circuit Markets, Applications Technology Maryann Bader	Feb	S1
Selective Photochemical Dry Etching of III-V Compound Semiconductors C.I.H. Ashby, D.R. Myers	Apr	129	Ultra-Pure Processing: An Enabling Technology for ULSI Ed Baker, Michael Current	Oct	91
Semiconductor Risk Management John Schaefer	Jul	83	Ultraclean Technology: Innovation for Semiconductor Manufacturing Tadahiro Ohmi	Oct	S1
Si-Based Integrated Optics Technologies S. Valette, J.P. Jadot, P. Gidon, S. Renard, A. Fournier, A.M. Grouillet, H. Denis, P. Philippe, E. Desgranges	Feb	69	Vacuum Pump Evaluation for an LPCVD Nitride Process Menso Hendriks, Ernst Ganneman, Monika Kuhn, Paul Bachmann	Nov	123
Si-Containing Electron Resist Materials for Bilayer Processing Technology Tsukasa Tada, Tohru Ushirogouchi	Jun	91	Work Injury and Illness Experience in the U.S. Semiconductor Industry Donald V. Lassiter	Jul	77
Silicon Source Gases for Chemical Vapor Deposition P.A. Taylor	May	143	X-Ray Lithography: The Promise of the Past and the Reality of the Present Daryl W. Peters, Robert D. Frankel	Mar	77
Stresses in Packaged Semiconductor Devices D.S. Soane	May	165			
Submicrometer Holographic Photolithography John Brook, Rene Dandliker	Nov	91			

1989 AUTHORS

Arnold, W.H.	Apr.	139	Hamilton, Richard E.	Jul.	95	Rai-Choudhury, Prosenjit	Aug.	119
Ashby, C.I.H.	Apr.	129	Harrigan, Jeanne	Jan.	103	Ramakrishna, F.	Jan.	103
Bachmann, Paul	Nov.	123	Harris, Karl	Jan.	100	Renard, S.	Feb.	69
Bader, Maryann	Feb.	S1	Hendriks, Menso	Nov.	123	Reynolds, D.M.	Apr.	109
Baker, Ed	Oct.	91	Hillard, Robert J.	Aug.	119	Reynolds, J.A.	May.	117
Baldwin, David G.	Jul.	73	Inam, A.	Feb.	106	Rhine, B.C.	May.	129
	Aug.	131		Aug.	143	Rieger, M.L.	Apr.	151
Barkan, J.A.	Apr.	109	Jaccodine, R.J.	Apr.	109	Salimian, S.	Jan.	109
Barth, Gunther	Jan.	119	Jadot, J.P.	Feb.	69	Schaefer, John W.	Jul.	83
Bate, Robert T.	Nov.	101	Joshi, S.P.	Apr.	175		Nov.	139
Berkowitz, Harry L.	Aug.	119	Kasper, G.	May.	155	Schoeffel, J.A.	Apr.	151
Bernard, C.	Feb.	79	Korolkoff, Nicholas O.	Mar.	97	Sharma, B.L.	Nov.	113
Bolmen, Richard A. Jr.	Jul.	63, 85		Oct.	115	Sheats, James R.	Jun.	79
Brar, A.S.	May.	250	Kuhn, Monika	Nov.	123	Sherin, Brian J.	Jul.	101
Brook, John	Nov.	91	LaDou, Dr. Joseph	Jul.	79		Sep.	119
Calzavara, M.	Feb.	89	Lahri, R.	Apr.	175	Simon, Randy	Sep.	141
Cambria, Terrell D.	Jul.	S1	Langerman, Neal	Jul.	87	Singh, B.	Apr.	139
Campbell, Robert J.	Jul.	93	Lassiter, Donald V.	Jul.	77	Smadi, M.M.	Apr.	119
Carlile, R.N.	Apr.	119	Leahey, Matthew	Oct.	115	Soane, D.S.	May.	165
Chawla, Mantosh K.	Sep.	135	Lee, Wei	Mar.	87	Stenger, H.J.	Apr.	109
Chow, Y.M.	May.	250	Liang, V.C.	Apr.	119	Stewart, J.	May.	117
Clayton, Anthony C.	Oct.	S9	Lingnau, J.	Sep.	105	Stewart, James H.	Jul.	73
Clemens, James T.	Mar.	69		Oct.	107		Aug.	131
Cooper, C.B. III	Jan.	109	Madar, R.	Feb.	79	Tada, Tsukasa	Jun.	91
Cornia, Robert D.	Jan.	119	Mahmud, Khalid T.	Sep.	135	Takenami, T.	Apr.	161
Current, Michael	Oct.	91	Manz, Paul C.	Oct.	115	Taylor, P.A.	May.	143
Dammal, R.	Sep.	105	Mazur, Robert G.	Aug.	119	Teasley, Laura	Jan.	119
	Oct.	107	McCoy, John H.	Mar.	87	Theis, J.	Sep.	105
Dandliker, Rene	Nov.	91	McIntyre, Andrew J.	Jul.	101		Oct.	107
Davis, M.	May.	107		Sep.	119	Tom, Glenn M.	Jul.	S1
Day, M.E.	Jan.	109	Menon, Venu B.	Mar.	S7	Tousi, Saied	Mar.	S1
Degiorgis, G.	Feb.	89		Oct.	S9	Ushirogouchi, Tohru	Jun.	91
Denis, H.	Feb.	69	Michaels, Linda D.	Mar.	S7			
Desgranges, E.	Feb.	69		Oct.	S9	Valette, S.	Feb.	69
Donovan, Robert P.	Mar.	S7	Myers, D.R.	Apr.	129	Varnell, Gil L.	Mar.	87
	Oct.	S9	Narayan, P.B.	May.	250	Vedage, H.	Apr.	109
Dutta, B.	Feb.	106	Nazar, L.	Aug.	143	Venkatesan, T.	Feb.	106
Ensor, D.S.	Mar.	S7	Nicollian, Edward H.	Aug.	107		Aug.	143
Fournier, A.	Feb.	69	Ohmi, Tadahiro	Apr.	161	Villa, P.L.	Feb.	89
Frankel, Robert D.	Mar.	77		Oct.	S1			
Fukuda, S.	Apr.	161	Olander, B.	May.	117	Wang, H-C	May.	155
Gallagher, William J.	Nov.	151	Parks, J.	Apr.	109	Weiss, Randy S.	Oct.	S14
Ganneman, Ernst	Nov.	123	Pauleau, Y.	Feb.	79	Wen, H-Y.	May.	155
Gidon, P.	Feb.	69	Peacock, N.T.	Oct.	99	Wetzel, Roy	Jan.	106
Gotlinsky, Barry	Mar.	S1	Peacock, R.N.	Oct.	99	Wrobel, Joseph J.	Jun.	103
Grouillet, A.M.	Feb.	69	Peters, Daryl W.	Mar.	77	Wu, X.D.	Feb.	106
							Aug.	143
Haas, F.	May.	107	Phan, K.	Apr.	139			
Hablanian, Marsbed	Oct.	83	Philippe, P.	Feb.	69	Yoon, S.F.	Feb.	89
Hakim, E.B.	May.	98	Plotnick, Irving	Jan.	102	Zuck, David S.	Nov.	131

ADVERTISERS INDEX

The Advertisers Index is published as a service. The publisher does not assume any liability for errors or omissions. * denotes regional ads.

Academic Press	87	Graham	97	Pyromatics, Inc.	102
AG Associates	61	Huntington Laboratories, Inc.	97	Research Devices	80
Air Products & Chemicals, Inc.	47	Innovative Engineering, Inc.	104	Resource Systems, Inc.	62
Alcatel Vacuum Products Inc.	59	J.C. Schumacher Co.	70	Schunk Graphite Technology	101
Applied Materials, Inc.	10, 11	Karl Suss America, Inc.	18, 19	Semiconductor Equipment Materials Institute (SEMI)	86
ASM International	1	Keithley Instruments, Inc., Systems Division	31	Semitec	88
ASM Lithography Inc.	14, 15	KTI Chemicals Incorporated	22, 23	Sierra Instruments, Inc.	25
AST Elektronik GmbH	*93	Leybold Vacuum Products, Inc.	Cover II	Signatone Company	63
Canon U.S.A. Inc.	13	Leybold-Inficon	104, 107	Silica Source Technology Corp. ..	104
CHA Industries	55	Lufran	33-36	Silvaco Data Systems	104
Convac GmbH	68, 69	MacDermid Microelectronic Chemicals	2	Sofie Instruments	79
CVC Products Inc.	30	Materials Development Corp.	4	Solid State Equipment Corp.	5
Drytek, Inc., A Unit of General Signal	66	Maxtek, Inc.	108	Solkatronic Chemicals, Inc.	56, 57
Edwards High Vacuum International	6, 7	McKean Machinery Sales, Inc.	107	Sputtered Films, Inc.	53
ENI Power Systems, Inc.	64, 65	MDA Scientific Inc.	29	Swagelok Companies	45
Enmet Corporation	68	Micromech Manufacturing Corp. .	103	Tencor Instruments	Cover IV
EPI	94	Microscience Inc.	46	Union Carbide, Industrial Chemicals Division	26
Epoxy Technology, Inc.	67	Nanometrics Incorporated	48	Universal Energy Systems Inc. ..	104
Ferrofluidics Corporation	60	Nikon Inc. Instrument Group	21	UTI Instruments Company	99
Fluoroware	101	Opto-Line Associates Inc.	103	Vacuum Barrier Corp.	108
Fusion Systems Corporation	72	PennWell Publishing Company	*93	Varian, SEG	17
GAF Chemical Corporation	42	Philips Export B.V.	1	VAT Incorporated	9
GE Quartz Products	54	Process Products Corporation	102	VG Instruments	Cover III
Genus Thin Film Division	39			Watkins-Johnson	27

Get Rid of LN₂ Cylinder Handling...



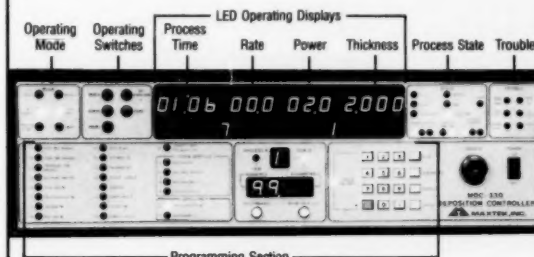
In Sputters, Evaporators
SEMIFLEX/Triax
Vacuum Insulated Pipe
from

**VACUUM
BARRIER VBC
CORPORATION**

P.O. Box 529
Woburn, Massachusetts 01801
(617) 933-3570

Circle 108

DEPOSITION CONTROLLER



The MDC-330 controls the thickness and rate of deposition of materials in vacuum systems using quartz crystal technology.

INEXPENSIVE • ACCURATE • RELIABLE

Features:

- Programmable for 8 processes.
- Store up to 32 layers.
- Easy plug-in option boards.
- Three programmable inputs and five discrete outputs.
- Automatic run to completion with Time/Power on crystal fail.
- RS232 available.

A complete line of accessories is available

Serving Vacuum Industry Since 1975

MAXTEK, INC.

2908 Oregon Court, Torrance, California 90503
(213) 320-6604 TLX 490000-1973 MXT UI

Circle 109